

JENNER & BLOCK LLP  
Reid J. Schar (*pro hac vice*)  
RSchar@jenner.com  
353 N. Clark Street  
Chicago, IL 60654-3456  
Telephone: +1 312 222 9350  
Facsimile: +1 312 527 0484

CLARENCE DYER & COHEN LLP  
Kate Dyer (Bar No. 171891)  
kdyer@clarencedyer.com  
899 Ellis Street  
San Francisco, CA 94109-7807  
Telephone: +1 415 749 1800  
Facsimile: +1 415 749 1694

CRAVATH, SWAINE & MOORE LLP  
Kevin J. Orsini (*pro hac vice*)  
korsini@cravath.com  
825 Eighth Avenue  
New York, NY 10019  
Telephone: +1 212 474 1000  
Facsimile: +1 212 474 3700

Attorneys for Defendant PACIFIC GAS AND ELECTRIC  
COMPANY

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF CALIFORNIA  
SAN FRANCISCO DIVISION

UNITED STATES OF AMERICA,  
Plaintiff,  
v.  
PACIFIC GAS AND ELECTRIC COMPANY,  
Defendant

Case No. 14-CR-00175-WHA

**RESPONSE TO REQUEST FOR  
FOLLOW UP BY PG&E  
CONCERNING ITS OCTOBER 26  
SUBMISSION**

Judge: Hon. William Alsup

1                   Defendant Pacific Gas and Electric Company (“PG&E”) respectfully submits this  
 2 response to the Court’s October 29, 2020 order requesting information based on PG&E’s  
 3 October 26, 2020 submission regarding the Zogg Fire. (Dkt. 1256.) The responses below  
 4 address three main subjects, presented in the same order as the Court’s questions:

5                   *First*, PG&E’s responses to Question 1-13 and 19 of the Court’s October 29, 2020  
 6 order, in addition to the below supplement to Questions 1-3 of the Court’s October 21, 2020  
 7 order, provide information relating to PG&E’s September 27, 2020 Public Safety Power Shutoff  
 8 (“PSPS”) event.

9                   *Second*, PG&E’s responses to Questions 14-17 concern the specific tree  
 10 apparently identified by CAL FIRE, and prior inspections and patrols of the area of interest.<sup>1</sup>

11                   *Third*, PG&E’s response to Question 18 provides further information as to why  
 12 there was no separate Catastrophic Event Memorandum Account (“CEMA”) inspection for the  
 13 Zogg Mine Road area of the Girvan 1101 12 kV Distribution Circuit (“Girvan Circuit”) between  
 14 the routine inspections of the circuit in 2019 and 2020.

15                   The Court asked that PG&E’s responses be submitted under oath. (Dkt. 1256 at  
 16 5.) Attached to this submission as Exhibits A and B are two declarations addressing matters for  
 17 which PG&E employees have personal knowledge. Other PG&E responses, such as those  
 18 addressing actions by CAL FIRE or PG&E vegetation management contractors, are based on  
 19 PG&E’s investigation and review of relevant records, and are not based on the personal  
 20 knowledge of PG&E employees. One response, to Question 14 concerning the history of  
 21 vegetation management work performed in the area of interest following the Carr Fire, is  
 22 preliminary given that PG&E’s investigation is in its beginning stages. PG&E is continuing to  
 23 investigate and will provide an updated response, along with a declaration or declarations as  
 24 requested by the Court, once it has analyzed further records and advanced its investigation.

25  
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<sup>1</sup> When PG&E refers to the “area of interest”, it is referring specifically to the vicinity of the  
 27 three specific spans of line from which CAL FIRE collected evidence, not the entire Girvan 1101  
 28 12 kV Distribution Circuit (“Girvan Circuit”) (which spans approximately 117 line miles). The  
 area of interest is depicted in Exhibit C to PG&E’s October 26, 2020 submission.

1                   Supplement to PG&E's October 26, 2020 Submission Responding to Questions 1-3  
 2                   of the Court's October 21, 2020 Order for Further Information Regarding the Zogg Fire

3                   Since PG&E's October 26, 2020 submission, PG&E has consulted with PG&E  
 4 personnel who were then "managing multiple Public Safety Power Shutoff ('PSPS') events"  
 5 (Dkt. 1250 at 11), in order to clarify the role of the Distribution Large Fire Probability Model  
 6 ("LFP<sub>D</sub>") in PSPS events.

7                   For distribution lines, the LFP<sub>D</sub> model combines two key inputs: PG&E's Outage  
 8 Producing Winds ("OPW") model and its Utility Fire Potential Index ("Utility FPI"). Based on  
 9 the combination of the OPW and Utility FPI, the LFP<sub>D</sub> model provides an initial meteorological  
 10 footprint for a PSPS event by scoring geographic areas to determine whether they meet a  
 11 threshold for de-energization set at 6.0. As discussed in more detail below, the conditions for  
 12 inclusion of the Girvan Circuit were not close to bringing those areas within the scope of a PSPS  
 13 event on September 27, 2020 based on the combination of the OPW and Utility FPI scoring less  
 14 than 3.2.

15                   Two additional methods are also considered for including areas in the PSPS  
 16 footprint even where the LFP<sub>D</sub> model scoring does not meet or exceed 6.0. *First*, PG&E's PSPS  
 17 model looks to see whether additional areas meet "Black Swan" criteria, which focuses on the  
 18 consequences of a potential fire without regard to its likelihood of occurring. If an area does,  
 19 that geographic area is included in the initial meteorological footprint for a PSPS event. *Second*,  
 20 if the results of the LFP<sub>D</sub> and Black Swan for a given area are close to, but below, the threshold  
 21 for de-energization, PG&E's meteorology team, led by PG&E's Meteorologist-In-Charge, may  
 22 nonetheless decide to recommend to the Officer-In-Charge for the PSPS event that the lines  
 23 running through that area should be de-energized because of the borderline results and because  
 24 other data (such as other weather models that give information on broader geographic areas)  
 25 suggest the probability that the weather event could be more severe than what the LFP<sub>D</sub> model is  
 26 predicting is relatively high.

1           It is the responsibility of the meteorology team to recommend areas for potential  
 2 de-energization based on their assessment of the models, as well as other available  
 3 meteorological data. If an area is not initially recommended for de-energization by the  
 4 meteorology team, that determination will not be reviewed by other departments at PG&E,  
 5 which do not have meteorological expertise.

6           The precise mechanics of the scoping process are described further herein in  
 7 response to the Court's October 29, 2020 follow-up questions.

8           **Question 1:** With respect to PG&E's Large Fire Probability model identification,  
 9 PG&E's description in Exhibit E states at page 14:

10           PG&E's Large Fire Probability (LFP) model identification of areas on  
 11 both PG&E's distribution and transmission systems with high wind-driven  
 12 outage probability combined with high probability of a large fire if an  
 ignition were to occur.

- 13           • On the distribution system, the Distribution Large Fire  
 14 Probability Model (LFP<sub>D</sub>) is a product of PG&E's Outage  
 Producing Wind (OPW) model and FPI models. The LFP<sub>D</sub>  
 15 model provides hourly output at 2km model resolution and  
 highlights locations with concurrence of a high probability  
 16 for large fires and high probability of wind-related outages  
 on PG&E's distribution system.
- 17           • On the transmission system, the Transmission Large Fire  
 18 Probability Model (LFP<sub>T</sub>) is the product of PG&E's  
 19 Transmission Operability Assessment (OA) model and FPI  
 20 models. The LFP<sub>T</sub> model provides hourly forecast outputs  
 21 for each transmission structure. The model highlights  
 locations with both an increased probability for large fires  
 and high probability of wind-related failures on PG&E's  
 transmission system.

22           Leading up to the Zogg Fire, how close did the Distribution Large Fire Probability model  
 23 come to assessing specifically the Girvan Distribution Line? Describe all September  
 24 2020 assessments made for the smallest area that included the Girvan Line.

25           **PG&E Response:**

26           To determine the recommended de-energization scope, the PG&E meteorology  
 27 department analyzes the meteorological conditions and fire potential for each portion of the  
 28

1 potential PSPS scope by breaking PG&E's service territory into preset grid cells of  
 2 two kilometers-by-two kilometers, as described in further detail below.

3                   The Girvan Circuit traverses 50 two kilometer-by-two kilometer grid cells and the  
 4 LFP<sub>D</sub> model specifically assessed each of these grid cells during the September 27, 2020 PSPS  
 5 event. At no point in the lead up to the September 27, 2020 PSPS event did any grid cell  
 6 traversed by the Girvan Circuit meet the 6.0 threshold for de-energization nor did any grid cell  
 7 satisfy the Black Swan criteria. The highest two kilometer-by-two kilometer LFP<sub>D</sub> output was  
 8 less than 3.2 (compared to the requisite 6.0 for inclusion), and it was forecast for grid cell  
 9 142\_377, which is located approximately 11 miles from the area of interest.<sup>2</sup>

10                  While the primary initial driver of the scope of de-energization is the  
 11 two-kilometer model, the model also assessed each of the 30 three kilometer-by-three kilometer  
 12 grid cells traversed by the Girvan Circuit. The highest output of the LFP<sub>D</sub> model for the  
 13 three kilometer-by-three kilometer grid cells traversed by the Girvan Circuit was 4.76, and it was  
 14 forecast for grid cell 89\_245, which overlaps with grid cell 142\_377 and is approximately  
 15 10.8 miles away from the area of interest.

16                  As a result of the PG&E meteorology team's review of this weather data, the  
 17 Girvan Circuit was not considered in scope for potential de-energization during the  
 18 September 27, 2020 PSPS event.

19                  PG&E is producing at Bates PGE-ZOGG-NDCAL-00009368 to PGE-ZOGG-  
 20 NDCAL-00009371 each of the LFP<sub>D</sub> model outputs that were run in September 2020 for the  
 21 two kilometer-by-two kilometer grid cells traversed by the Girvan Circuit. PG&E is producing  
 22 at Bates PGE-ZOGG-NDCAL-00009372 each of the LFP<sub>D</sub> model outputs that were run in  
 23 September 2020 for the three kilometer-by-three kilometer grid cells traversed by the Girvan

24  
 25  
 26                  <sup>2</sup> When PG&E refers to distances in relation to grid cells in this submission, such distances  
 27 are calculated from the mid-point of the grid cell.

1 Circuit.<sup>3</sup> The table in Appendix A lists the column headers for the output of the LFP<sub>D</sub> model  
 2 alongside a brief description of what each column header means.

3 **Question 2:** What were the specific ratings, scores and weightings considered by the  
 4 PG&E team, broken out for each distribution line in Shasta County in the September  
 5 PSPS?

6 **PG&E Response:**

7 PG&E does not have any “specific ratings, scores and weightings . . . broken out  
 8 for each *distribution line* in Shasta County” but rather has such data for *each geographic grid*  
 9 *cell* in Shasta County. PG&E determines the scope of de-energization for distribution circuits by  
 10 analyzing the LFP<sub>D</sub> model outputs and related forecast meteorological conditions of  
 11 two kilometer-by-two kilometer geographic regions called grid cells, which then leads to the  
 12 creation of the de-energization polygon. After the de-energization polygon is created, PG&E  
 13 determines which distribution lines, if any, traverse that polygon.

14 In response to the Court’s question, PG&E has therefore identified the  
 15 two kilometer-by-two kilometer and three kilometer-by-three kilometer grid cells traversed by  
 16 each of the 39 distribution circuits in Shasta County. For the grid cells traversed by each of these  
 17 distribution circuits, PG&E is producing at Bates PGE-ZOGG-NDCAL-00009373 the LFP<sub>D</sub>  
 18 model output for the run immediately prior to PG&E’s final scoping decision based on the  
 19 two kilometer-by-two kilometer grid cells and at Bates PGE-ZOGG-NDCAL-00009374 for the  
 20 three kilometer-by-three kilometer grid cells. PG&E refers the Court to the table in Appendix A  
 21 that describes what each column of the LFP<sub>D</sub> output represents.

22 PG&E runs the LFP<sub>D</sub> model four times each day—initialized at 00:00, 06:00,  
 23 12:00 and 18:00 UTC. Bates PGE-ZOGG-NDCAL-00009373 and Bates PGE-ZOGG-NDCAL-  
 24

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 27 <sup>3</sup> PG&E is providing these LFP<sub>D</sub> model outputs, as well as the other data referred to in  
 28 response to Questions 2, 6, 7 and 8, on the same thumb drive that it is delivering to the Court in  
 response to Question 19. Appendix B contains an index of the Bates-stamped data.

1 00009374 contain the September 27, 2020 00:00 UTC model run because it was the latest model  
 2 run that informed the final PSPS scope.<sup>4</sup>

3 **Question 3:** To what extent, if at all, did the Distribution Large Fire Probability model  
 4 take into account the extent to which vegetation had been cleared or trimmed or not  
 5 cleared or trimmed in the immediate vicinity of a specific distribution line?

6 **PG&E Response:**

7 The LFP<sub>D</sub> model is not based on the extent to which vegetation had been cleared  
 8 or trimmed. Even in a perfectly trimmed area, severe wind conditions are capable of causing  
 9 catastrophic fires by causing healthy trees and limbs to make contact with a line or by causing  
 10 equipment failures. PG&E determines the scope of de-energization for distribution circuits by  
 11 analyzing the forecast meteorological and fuel conditions of two kilometer-by-two kilometer  
 12 geographic regions called grid cells. The specific factors and data inputs for the LFP<sub>D</sub> model are  
 13 discussed in response to Question 9, below.

14 Thus, even when PG&E has patrolled a line and worked trees prior to fire season,  
 15 PG&E will still consider such lines for de-energization. Vegetation is dynamic, such that  
 16 vegetation that did not qualify for removal during PG&E's latest patrol may have changed by the  
 17 time of a PSPS event. Vegetation management patrols rely on trained and qualified arborists, but  
 18 as with any process that involves subjective human judgment, may not be executed perfectly.  
 19 Additionally, there are potential sources of wildfire ignition other than hazard trees and limbs.  
 20 For example, extreme weather presents the risk of high winds causing a healthy tree or limb to  
 21 break and make contact with a line; in the case of a limb, the limb could be carried some distance  
 22 before it strikes the line. Moreover, high winds could cause a piece of equipment to fail, such as  
 23 a pole that is blown over, or cause lines to slap together. Lastly, PG&E's power lines could be  
 24 struck by other objects, such as metallic balloons or other airborne debris carried by the wind.

25  
 26  
 27 <sup>4</sup> As explained in the response to Question 9, PG&E's meteorology department may also  
 28 consider earlier model runs at any point in the process or to see the evolution of scores. PG&E  
 does not keep a record of when earlier model runs are reviewed by meteorologists.

**Question 4:** To what extent, if at all, did the Distribution Large Fire Probability model take into account the fire threat tier level through which a specific distribution line ran?

## PG&E Response:

The LFP<sub>D</sub> model is run only with respect to PG&E’s High Fire Risk Area, which includes the CPUC-defined High Fire-Threat Districts (“HFTD”). Beyond that, whether the area is Zone 1 or Tiers 2 or 3 is not itself directly relevant to the analysis, though the meteorological and fuel conditions, which in the long-term inform Tier determination, are factored into the model for each individual cell. The specific factors and data inputs for the LFP<sub>D</sub> model are discussed below in PG&E’s response to Question 9.

**Question 5:** Did the Distribution Large Fire Probability model take into account the difficulty or ease with which residents would be able to evacuate on short notice in the event of a wildfire?

## PG&E Response:

The LFP<sub>D</sub> model did not take into account the difficulty or ease with which residents would be able to evacuate on short notice in the event of a wildfire, which would vary based on the location of each resident and the circumstances of individual fires and shifting winds. The specific factors and data inputs for the LFP<sub>D</sub> model are discussed below in PG&E's response to Question 9.

**Question 6:** For the smallest region that included the Girvan Line, what were PG&E's ratings and/or assessments in days and hours leading up to the late September PSPS with respect to (see page 14 of Exh. E):

- (a) Fuel moisture;
- (b) Humidity;
- (c) Wind speed;
- (d) Air temperature;
- (e) Land type; and
- (f) Historical fire occurrences

1 **PG&E Response:**

2 PG&E's ratings and/or assessments of the fuel moisture, humidity, wind speed  
 3 and air temperature values for each grid cell traversed by the Girvan Circuit are located in the  
 4 LFP<sub>D</sub> model outputs produced in response to Question 1. PG&E refers the Court to the table in  
 5 Appendix A, which describes what each column of the LFP<sub>D</sub> output represents.

6 PG&E is producing its ratings and/or assessments of the "land type" for each  
 7 two kilometer-by-two kilometer grid cell traversed by the Girvan Circuit at Bates PGE-ZOGG-  
 8 NDCAL-00009375 and for each three kilometer-by-three kilometer grid cell at Bates PGE-  
 9 ZOGG-NDCAL-00009376. As seen therein, the land type for such grid cells is a combination of  
 10 Forests, Shrublands and Grass-Savannas.

11 Neither the Utility FPI nor the LFP<sub>D</sub> models consider whether a given grid cell or  
 12 distribution line has experienced historical fires. But historical fire occurrences are used as a  
 13 data input to develop the Utility FPI model, and the output thereof is incorporated into the LFP<sub>D</sub>  
 14 model, as discussed below in response to Question 9. Thus, instead of looking to whether a  
 15 given area has experienced fires in the past, PG&E correlates decades of historical fire data and  
 16 related weather conditions to develop a model that predicts the likelihood that in a given area,  
 17 under the input weather, fuel and related conditions, a 40-acre fire will grow to 1,000 acres. By  
 18 relying on a comparison to the weather and related conditions of past fires, PG&E is able to  
 19 provide forecasts applicable across its service territory. The two historical fire datasets used to  
 20 develop the Utility FPI model are the U.S. Forest Service's Fire Program Analysis—Fire-  
 21 Occurrence Database and a database compiled by PG&E of large fires and their associated  
 22 perimeters from the Visible Infrared Imaging Radiometer Suite.

23 **Question 7:** How did those assessments compare specifically to the smallest  
 24 region that included the de-energized line nearest the Girvan Line?

25 **PG&E Response:**

26 For the September 27, 2020 PSPS event, PG&E's meteorology department  
 27 recommended de-energizing a polygon through which three distribution circuits traversed (the  
 28

1 Deschutes 1101, Volta 1101 and Volta 1102 Distribution Circuits) and which was comprised of  
2 95 two kilometer-by-two kilometer grid cells. The nearest de-energized circuit to the Girvan  
3 Circuit is the Deschutes 1101 Distribution Circuit (the “Deschutes Circuit”).

4 The two kilometer-by-two kilometer grid cell that comprises part of the  
5 de-energization polygon nearest the Girvan Circuit that contains a de-energized portion of the  
6 Deschutes Circuit is 157\_377. PG&E’s ratings and/or assessments of the fuel moisture,  
7 humidity, wind speed and air temperature values for each two kilometer-by-two kilometer grid  
8 cell comprising the de-energization polygon (including grid cell 157\_377) are located in the  
9 LFP<sub>D</sub> model outputs for those grid cells, which PG&E is producing at Bates PGE-ZOGG-  
10 NDCAL-00009377 to PGE-ZOGG-NDCAL-00009380.

11 The three kilometer-by-three kilometer grid cell that comprises part of the  
12 de-energization polygon nearest the Girvan Circuit that contains a de-energized portion of the  
13 Deschutes Circuit is 99\_245. PG&E is producing the LFP<sub>D</sub> model outputs for the  
14 three kilometer-by-three kilometer grid cells traversed by the de-energization polygon (including  
15 grid cell 95\_245) at Bates PGE-ZOGG-NDCAL-00009381 to PGE-ZOGG-NDCAL-00009384.

16 PG&E refers the Court to the table in Appendix A that describes what each  
17 column of the LFP<sub>D</sub> output represents.<sup>5</sup>

18 **Question 8:** Explain specifically why some lines in Shasta County were de-energized  
19 but the Girvan Line in Shasta County was not. How close were any de-energized lines to  
20 the Girvan Line and what specifically accounted for the difference?

21 **PG&E Response:**

22 Three distribution circuits in Shasta County were de-energized as part of the  
23 September 27, 2020 PSPS event (the Deschutes 1101, Volta 1101 and Volta 1102 Distribution  
24 Circuits). The decision to de-energize the polygon traversed by those three circuits and not to  
25

26 \_\_\_\_\_  
27 <sup>5</sup> PG&E is also producing its ratings and/or assessments of the “land type” for each  
28 two kilometer-by-two kilometer grid cell traversed by the de-energization polygon at Bates PGE-  
ZOGG-NDCAL-00009385 and for each three kilometer-by-three kilometer grid cell at  
Bates PGE-ZOGG-NDCAL-00009386.

1 de-energize the Girvan Circuit was due to differences in the forecast weather conditions for their  
 2 respective grid cells. As discussed above in response to Question 1, none of the two kilometer-  
 3 by-two kilometer or three kilometer-by-three kilometer grid cells traversed by the Girvan Circuit  
 4 exceeded the de-energization guidance values of the LFP<sub>D</sub> model or Black Swan criteria.

5 The forecast weather conditions inside the de-energized polygon through which  
 6 the three de-energized distribution lines traversed were significantly more severe than those  
 7 forecast to face the Girvan Circuit. While none of the two kilometer-by-two kilometer grid cells  
 8 in the de-energization polygon exceeded the de-energization guidance values of the LFP<sub>D</sub> model  
 9 or Black Swan criteria, 26 of the three kilometer-by-three kilometer grid cells did exceed the  
 10 6.0 de-energization guidance values of the LFP<sub>D</sub> model, with values as high as 15.3. And so, in  
 11 light of the relatively more severe forecast weather in the polygon, and based on the available  
 12 data and their subject matter expertise, PG&E's meteorology team recommended that the  
 13 polygon should be de-energized.

14 The two kilometer-by-two kilometer grid cell nearest the Girvan Circuit that  
 15 contains a de-energized portion of each of three distribution circuits in Shasta County that were  
 16 de-energized as part of the September 27, 2020 PSPS event, and the grid cell's distance from the  
 17 Girvan Circuit, is listed below:

- 18                   • For the Deschutes Circuit, grid cell 157\_377 is approximately 18.9 miles  
                       from the Girvan Circuit.
- 19                   • For the Volta 1101 Circuit, grid cell 158\_374 is approximately 20.5 miles  
                       from the Girvan Circuit.
- 20                   • For the Volta 1102 Circuit, grid cell 157\_377 is approximately 18.9 miles  
                       from the Girvan Circuit.<sup>6</sup>

25                   <sup>6</sup> PG&E notes that each of these three circuits have de-energized spans that are nearer to the  
 26 Girvan Circuit than are the grid cells listed in response to Question 8 but that such spans fell  
 27 outside of the de-energization polygon. These spans were de-energized only because they were  
 28 connected to spans located inside the de-energization polygon. PG&E does not interpret the  
 Court's request to be focused on these outside-the-polygon grid cells and so PG&E is not  
 producing detail or data concerning such spans or their grid cells.

1 LFP<sub>D</sub> model outputs for the grid cells traversed by the Girvan Circuit were  
 2 produced in response to Question 1, and LFP<sub>D</sub> model outputs for the grid cells traversed by the  
 3 de-energization polygon were produced in response to Question 7. PG&E is also producing the  
 4 LFP<sub>D</sub> model outputs for each of the two kilometer-by-two kilometer grid cells traversed by the  
 5 Deschutes 1101, Volta 1101 and Volta 1102 Circuits at Bates PGE-ZOGG-NDCAL-00009387 to  
 6 PGE-ZOGG-NDCAL-00009390 and for each such three kilometer-by-three kilometer grid cell at  
 7 Bates PGE-ZOGG-NDCAL-00009391 to PGE-ZOGG-NDCAL-00009394.

8 **Question 9:** Describe with specificity and step-by-step how the “Distribution Large Fire  
 9 Probability Model” works, how it weights various factors, and all other factors used and  
 10 their weights in deciding which lines to de-energize. Is the decision done by algorithm or  
 11 by subjective assessment? Please attach examples of any worksheets used for Shasta  
 12 County in the late September PSPS.

13 **PG&E Response:**

14 Weather models inform many operational decisions throughout PG&E to prepare  
 15 for forecast conditions and to mitigate fire risk, including PSPS. PG&E has tested and deployed  
 16 high-resolution weather models and built high-resolution historical datasets by partnering with  
 17 external experts. These high-resolution historical datasets and forecasts drive the OPW and  
 18 Utility FPI models, which are the main inputs into the framework PG&E utilizes to make the  
 19 decision to execute a PSPS event.

20 The 6.0 LFP<sub>D</sub> threshold is the product of PG&E’s OPW and Utility FPI models.  
 21 The OPW and Utility FPI models are used together by the LFP<sub>D</sub> model to understand both the  
 22 probability of an outage and potential ignition together with the potential consequence of a  
 23 resulting fire. These models were derived by analyzing historical PG&E outage events and the  
 24 conditions that existed during the worst fires in California history.

25 The OPW model is based on an analysis of windspeeds for every unplanned  
 26 sustained and momentary outage that occurred over the last decade and forecasts the probability  
 27 of unplanned outages associated with wind events occurring in PG&E’s service area. The OPW

1 model is driven by PG&E's high-resolution weather modeling output. The OPW model is  
 2 trained through an analysis of wind speeds during approximately 400,000 outages on PG&E's  
 3 distribution grid. For every sustained and momentary outage, the wind speed was extracted from  
 4 PG&E's historical dataset based on the time and location that each event occurred. This  
 5 extraction allowed PG&E data scientists to develop wind-outage relationships and models that  
 6 can then be run in forecast-mode. The OPW model forecasts the probability for a wind-driven  
 7 outage based on forecast windspeed for each grid cell for every hour of the forecast.  
 8 Outage-producing winds vary across PG&E's system based on differences in topography,  
 9 vegetation and climatological weather exposure in different parts of PG&E's service territory.

10 The Utility FPI model uses logistic regression to predict the probability of a  
 11 40-acre fire growing to 1,000 acres or more in a given geographic location based on  
 12 three decades of meteorological data (including weather, fuel moisture and climatology data) and  
 13 26 years of historical wildfire data from the U.S. Forestry Service ("USFS") in PG&E's service  
 14 territory. Similar to with the OPW model, PG&E extracted the weather data and dead and live  
 15 fuel moisture data for each historical fire in the USFS fire occurrence dataset in California.  
 16 PG&E's data scientists constructed over 4,000 Utility FPI model variants to determine the  
 17 optimal combination of the fire weather parameters, dead and live fuel moisture, and other  
 18 factors. The Utility FPI model takes the forecast meteorological and fuel conditions for each  
 19 grid cell as an input and provides, for each forecast hour, the probability of a 40-acre fire  
 20 growing to 1,000 acres or more.<sup>7</sup>

21 Using the outputs from the OPW and Utility FPI models as well as other criteria  
 22 listed below, the LFP<sub>D</sub> model indicates for each two kilometer-by-two kilometer and

23

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24 <sup>7</sup> The output of the Utility FPI model for a given grid cell is shown by the below series of  
 25 equations where LFM is the live fuel moisture percentage, DFM<sub>10hr</sub> is the 10-hour dead fuel  
 26 moisture percentage, FFWI is the Fosberg Fire Weather Index and LU<sub>Shrublands</sub> and LU<sub>Forest</sub> are  
 land-use variables. Each input is standardized using the mean and standard deviation of the  
 historical fire dataset.

27

$$FPI = \frac{1}{1+e^{-y}}$$

28

$$y = -1.68 - 0.24 * LFM - 0.26 * DFM_{10hr} + 0.22 * FFWI + 0.06 * LU_{Shrublands} + 0.47 * LU_{Forest}$$

1 three kilometer-by-three kilometer grid cell each hour, a categorization relating to the probability  
 2 of a large fire originating from PG&E distribution equipment, to which PG&E has pre-assigned a  
 3 recommendation for de-energization. The LFP<sub>D</sub> model categorizes each grid cell over the  
 4 forthcoming 104-hour period into one of four categories (called “dx\_conditions”):

- 5 • “Below\_Guidance” indicates that the grid cell fails to meet minimum  
 6 fire-potential conditions which are those minimum conditions present during the  
 7 vast majority of large fires in California history based on the USFS fire  
 8 occurrence data, and so the model does not recommend de-energization.<sup>8</sup>
- 9 • “Fire\_Potential” indicates that the grid cell meets the minimum fire-potential  
 10 conditions that must be exceeded for de-energization to be considered, but the  
 11 product of the OPW and the Utility FPI models does not exceed 6.0, indicating  
 12 that the forecast probability of a large fire occurring, while possible, is insufficient  
 13 for the model to recommend de-energization based on the set threshold.
- 14 • “Dx\_Fire\_Potential” indicates that the grid cell meets the minimum fire-potential  
 15 conditions and that the product of the OPW and the Utility FPI models exceeds  
 16 6.0, PG&E’s threshold for recommending de-energization.
- 17 • “Black\_Swan” indicates that the grid cell meets the minimum fire-potential  
 18 conditions and the product of the OPW and the Utility FPI models does not  
 19 exceed 6.0, but that the consequences of a fire igniting are severe enough that,  
 20 regardless of the likelihood of such a fire, de-energization is recommended.<sup>9</sup>

21

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22 <sup>8</sup> The LFP<sub>D</sub> model defines minimum fire-potential conditions as satisfying all of the  
 23 following criteria: Utility FPI greater than 0.2; sustained wind speed greater than 20 mph;  
 24 relative humidity less than 30%; dead fuel moisture – 10-hour less than 8%; dead fuel moisture –  
 100-hour less than 10%; and dead fuel moisture – 1000-hour less than 14%.

25 <sup>9</sup> The LFP<sub>D</sub> model defines Black Swan conditions as satisfying all of the following criteria:  
 26 Utility FPI greater than 0.3; sustained wind speed greater than 30 mph; relative humidity less  
 27 than 20%; dead fuel moisture – 10-hour less than 8%; dead fuel moisture – 100-hour less than  
 28 10%; and dead fuel moisture – 1000-hour less than 14%. Until mid-October 2020, the model  
 inadvertently used a 40-mph wind speed criterion rather than the decided-upon 30 mph criterion  
 for the Black Swan conditions. PG&E notes that the forecast sustained wind speed during the

1           The PG&E meteorology team is not limited to only analyzing or considering for  
 2 de-energization the grid cells that meet the 6.0 LFP<sub>D</sub> threshold or the Black Swan criteria. The  
 3 PG&E meteorology team is able to review those grid cells that are below the recommended  
 4 guidance and utilize their expertise and knowledge of past weather events to recommend grid  
 5 cells that do not satisfy the 6.0 threshold or the Black Swan criteria for de-energization based on  
 6 the totality of the meteorological data available. For example, the team is able to review earlier  
 7 model run outputs because the LFP<sub>D</sub> model is run four times a day—at 00:00, 06:00, 12:00 and  
 8 18:00 UTC. Due to the fact that weather forecasts constantly change, this look-back can identify  
 9 areas that are not currently satisfying the criteria but that may have previously exceeded  
 10 guidance or that may be on the cusp of satisfying the criteria and could exceed criteria if there  
 11 are relatively small weather shifts. In addition, PG&E meteorologists utilize other public and  
 12 proprietary weather forecast model data to help put the PG&E's weather forecast model in  
 13 perspective and better understand the forecast uncertainty.

14           While the primary initial driver of the scope of a de-energization decision is the  
 15 algorithmic output of the two kilometer-by-two kilometer LFP<sub>D</sub> model and its application of the  
 16 Black Swan criteria based on objective weather data, PG&E also considers additional factors in  
 17 deciding on the recommended de-energization scope, and the decision is ultimately a judgment  
 18 by the meteorology team based on all of the available data. These data include the LFP<sub>D</sub> model  
 19 run on three kilometer-by-three kilometer grid cells and weather forecasts generated by other  
 20 weather models.

21           PG&E notes that the meteorology department cannot begin scoping specific areas  
 22 for de-energization until approximately four days before a potential de-energization event when  
 23 its high-resolution forecast model data become available. Once inside that time window, the  
 24 meteorology department begins that process of analyzing the LFP<sub>D</sub> model on each of those grid  
 25 cells and analyzing the results on a grid cell-by-grid cell basis. The LFP<sub>D</sub> model estimates the  
 26

27 September 27, 2020 PSPS event for the two kilometer-by-two kilometer grid cells traversed by  
 28 the Girvan Circuit did not exceed 26 mph.

1 probability of a large fire originating in each grid cell that traverses the geographical scope of a  
 2 potential PSPS event. When the LFP<sub>D</sub> model's output indicates that the forecast weather  
 3 conditions in certain grid cells exceed guidance values, or when the output approaches those  
 4 guidance values, PG&E's meteorology team considers whether to recommend de-energizing  
 5 those grid cells and any surrounding area. To convey the geographical and temporal  
 6 recommendation for the scope of de-energization, PG&E's meteorology department develops a  
 7 polygon in its ArcGIS Pro mapping program and passes that map and associated metadata on to  
 8 the PSPS Viewer Team, which determines which of PG&E's distribution assets traverse that area  
 9 of the map—in essence, converting the geographical/temporal polygon into a list of distribution  
 10 circuits to be de-energized. PG&E's meteorology team has to make its initial recommendation  
 11 for the scope of any de-energization 72 hours in advance and again 24-48 hours in advance of the  
 12 de-energization window because PG&E needs time to operationally prepare for the shut-off and  
 13 the subsequent re-energization,<sup>10</sup> and because PG&E is required to notify public safety partners  
 14 and affected customers in advance of an anticipated de-energization.

15 With respect to the Court's request for examples of "any worksheets used for  
 16 Shasta County in the late September PSPS", PG&E refers the Court to the output of the LFP<sub>D</sub>  
 17 models produced herein, including in response to Question 2.

18 **Question 10:** At page 16 of Exhibit E, PG&E states:

19 In light of the meteorological information indicating the potential for  
 20 catastrophic wildfire and the customer impacts from mitigating that fire  
 21 risk through de-energization, PG&E considered whether alternatives to de-  
 energizing, such as additional vegetation management and disabling

22 <sup>10</sup> For example, after each PSPS event, PG&E patrols all de-energized lines for signs of  
 23 damage before re-energization. In 2019, PG&E's target was to restore service after a PSPS  
 24 event within 24 hours after the weather conditions cleared. In 2020, PG&E has substantially  
 25 increased the resources necessary to quickly patrol power lines, and PG&E's 2020 Wildfire  
 26 Mitigation Plan ("WMP") aimed for a 50% improvement in daylight restoration time, restoring  
 27 power for 98% of customers within 12 daylight hours from the time the weather conditions clear.  
 28 See WMP at 5-287. Throughout 2020, PG&E had five PSPS events and was able to restore  
 power for 95.5% of customers within 12 daylight hours from the time the weather conditions  
 cleared. PG&E notes that it was able to accomplish this notwithstanding the fact that smoke  
 from wildfires prevented PG&E from flying helicopters in many locations to quickly inspect  
 lines and restore power following the September 7, 2020 PSPS event.

1 automatic reclosers, could adequately reduce the risk of catastrophic  
2 wildfire to obviate the need for de-energization. PG&E determined that  
3 these measures alone did not reduce the risk of catastrophic wildfire in  
areas within the PSPS scope sufficiently to protect public safety.

4

- 5 PG&E conducted hazard tree mitigation efforts on circuits potentially  
in PSPS scope in the days leading up to the event and continued up  
through the day of de-energization.
- 6 PG&E conducted pre-patrols of circuits and equipment in de-  
energization scope in the days leading up to the time of de-  
energization.
- 7 The company disabled automatic reclosing in Tier 2/Tier 3 areas.
- 8 PG&E deployed Safety and Infrastructure Protection (SIP) crews for  
real-time observations and fire response.

9  
10 With respect to this statement:

11

- 12 (a) What hazard tree mitigation efforts were done on the Girvan Circuit  
“in the days leading up to the event and continued up through the day of  
13 de-energization” Please append all pertinent reports, photographs and  
14 documents and name the people who made any such effort.
- 15 (b) What “pre-patrols” were done on the Girvan Circuit within the  
16 meaning of your statement in the run-up to the PSPS?
- 17 (c) Was the Girvan Circuit in Tier 2 or Tier 3 and were any of its  
18 automatic reclosers “disabled” within the meaning of your statement?
- 19 (d) Were any real-time crews deployed along the Girvan Circuit?

20

**PG&E Response:**

21 With respect to subquestion (c), the Girvan Circuit is in a Tier 2 HFTD. As part  
22 of PG&E’s ongoing wildfire-mitigation efforts, PG&E disables automatic reclosing in Tier 2 and  
23 Tier 3 HFTDs at the start of fire season and, therefore, automatic reclosing was disabled on all  
24 reclosers on the Girvan Circuit throughout the September 27, 2020 PSPS event.

25 With respect to the remaining subquestions, each of these three wildfire safety  
26 measures were considered only “on circuits potentially in PSPS scope” and “in de-energization

1 scope” for the September 27, 2020 PSPS event in order to potentially avoid the necessity of a  
 2 shut-off and to expedite re-energization of the de-energized lines. Exhibit E to PG&E’s  
 3 October 26 filing explains that “PG&E considered whether [these] alternatives to de-energizing  
 4 . . . could adequately reduce the risk of catastrophic wildfire to obviate the need for de-  
 5 energization” but “determined that these measures alone did not reduce the risk of catastrophic  
 6 wildfire in areas within the PSPS scope sufficiently to protect public safety”. (Dkt. 1250-5 at  
 7 18.)

8 As discussed above and in PG&E’s October 26 submission, the Girvan Circuit  
 9 was never in scope for the September 27, 2020 PSPS event. Because the Girvan Circuit was  
 10 never in scope for the PSPS event, the measures undertaken to potentially avoid de-energization  
 11 referenced in subquestions (a), (b) and (d) were not conducted on the Girvan Circuit in the days  
 12 leading up to the September 27, 2020 PSPS event.

13 **Question 11:** At page 23, Exhibit E states:

14 PG&E teams met to discuss the models trending weaker in TP8 (Kern  
 15 county). Leaders decided to abort the TP8 PSPS event as the latest  
 16 forecasts indicated that no areas exceeded PSPS guidance. By 1142 PDT,  
 17 all areas de-energized in this event were given the Weather All Clear.

18 Specifically, please identify by name and position and role each member of the “PG&E  
 19 Team” and each one of the “Leaders” referenced in this paragraph.

20 **PG&E Response:**

21 The members of the PG&E Team and the Leaders, along with their positions and  
 22 roles, referenced in the paragraph quoted by the Court are identified in Exhibit C, which PG&E  
 23 is filing under seal.

24 **Question 12:** In its PSPS program, has PG&E ever de-energized a distribution line even  
 25 though it had been cleared of hazard trees and limbs? If so, please give examples and  
 26 explain why it de-energized lines with no such risk?

1 **PG&E Response:**

2 As stated above in response to Question 3, the LFP<sub>D</sub> model currently used by  
 3 PG&E is not based on the extent to which vegetation has been cleared or trimmed. PG&E's  
 4 PSPS determinations for distribution circuits are based on severe weather and fuel conditions,  
 5 regardless of whether the lines in those areas have been cleared of vegetation per all  
 6 requirements. A risk of electrically caused wildfires exists regardless of whether a particular  
 7 segment of line has been cleared of hazard trees and limbs, as discussed above in response to  
 8 Question 3.

9 **Question 13:** Why isn't the PSPS decision made by asking this simple question — Is the  
 10 line safe to conduct power during high winds? If yes, then PG&E would leave it on. If  
 11 not, then PG&E would turn it off during the storm. The balancing-of-factors approach  
 12 that PG&E uses, according to its generalized description, leaves open the possibility that  
 13 a line will remain powered up even though it's unsafe to do so in a windstorm (due to the  
 14 presence of hazard trees or threatening limbs not yet fixed by PG&E).

15 **PG&E Response:**

16 PG&E's PSPS decision-making process is intended to answer the question  
 17 whether it is safe for a line to conduct power during a forecast high-wind event. In particular, the  
 18 process has been designed to put in place the appropriate tools and framework necessary to be  
 19 able to forecast unsafe conditions in advance of severe weather events (*i.e.*, high winds, low  
 20 humidity and dry fuels) with sufficient time to make the necessary notices and take the necessary  
 21 preparatory operational steps. PG&E must make PSPS decisions across large geographic areas  
 22 on a compressed timeline with changing forecast information, and it is not feasible for PG&E to  
 23 do so without reliance on appropriate models that weigh the relevant factors to identify areas that  
 24 exceed or approach the determined threshold risk for de-energization. That process has  
 25 necessarily been designed to identify specific criteria that allow PG&E's decision-makers to  
 26 translate what "safe" means into operationally consistent and executable real-world decisions of  
 27 whether to de-energize a particular area.

1           Further, whether conducting power in a certain area based on forecast weather  
 2 data is safe is not a question with an absolute answer but rather depends on a balancing of  
 3 competing risks, as de-energization itself poses significant public safety risks. Thus, while  
 4 PG&E could lower its thresholds for de-energization to reduce wildfire risk, that would lead to  
 5 other consequences. As the CPUC notes, “a PSPS can leave communities and essential facilities  
 6 without power, which brings its own risks and hardships, particularly for vulnerable communities  
 7 and individuals”.<sup>11</sup> De-energization impacts first responders, critical medical care and the  
 8 provision of water, sewer and other essential services, including street lights and signals and  
 9 communications systems. There are also significant economic costs to the affected community  
 10 from de-energization.

11           Further still, hotter and drier weather, more severe droughts and stronger winds  
 12 have created pervasive fire risk across large swaths of California for extended periods of time.  
 13 In 2020 alone, thousands of wildfires have burned over four million acres in California from a  
 14 variety of causes.<sup>12</sup> To eliminate all safety risk of wildfires from energized power lines, the level  
 15 of outages that would be required would be pervasive and would carry an enormous level of  
 16 adverse consequences that have been discussed by PG&E in greater detail in prior filings  
 17 (see, e.g., Dkt. 976), and PG&E believes would be unacceptable to its regulators and the public  
 18 at large.

19           Within these boundaries, PG&E’s PSPS decision-making process is designed and  
 20 has allowed PG&E to systematically and in an operationally executable manner to identify areas  
 21 where forecast weather conditions pose the greatest risk of leaving a line energized, and are  
 22 therefore not “safe”, and to execute de-energizations with the required notifications to customers  
 23 and safety partners and the associated operational mobilizations.

24  
 25  
 26           <sup>11</sup> See CPUC, *Public Safety Power Shutoff (PSPS) / De-Energization*, <https://www.cpuc.ca.gov/deenergization/> (last accessed Nov. 18, 2020).

27           <sup>12</sup> See, e.g., CAL FIRE, *2020 Fire Season Outlook*, <https://www.fire.ca.gov/incidents/> (last  
 28 accessed Nov. 18, 2020).

1                   **Question 14 [Part 1]:** With respect to Exhibit D, the first photograph shows a  
2 gray pine uphill from the distribution line looming in the direction of the  
3 transmission line. Is this the gray pine that was eventually recovered by  
4 CAL FIRE? Is that gray pine still there?

5 **PG&E Response:**

6                   PG&E is attaching as Exhibit D annotated copies of the photographs included in  
7 Exhibit D to its October 26 submission, indicating the tree that PG&E currently believes to have  
8 been partially collected by CAL FIRE during its investigative process (the “Gray Pine of  
9 interest”). As PG&E indicated in its October 26, 2020 submission, only portions of the Gray  
10 Pine of interest appeared to have been collected by CAL FIRE, including one trunk section  
11 (which PG&E estimates may have been approximately eight feet long) and branches from higher  
12 up on the tree. As further indicated in its October 26 submission, PG&E is preserving the  
13 remainder of the Gray Pine of interest in an abundance of caution pending the outcome of CAL  
14 FIRE’s investigation.

15                   All portions of the Gray Pine of interest left behind by CAL FIRE (other than the  
16 root system) were collected by PG&E on November 4. Prior to the collection, PG&E gave  
17 notice of the collection to the CPUC, CAL FIRE, the Shasta County District Attorney and  
18 lawyers representing certain civil plaintiffs to provide them the opportunity to document the site  
19 beforehand and to observe the collection. As with the remainder of potential evidence collected  
20 from the area of interest, the Gray Pine of interest was collected and is being preserved by Fire  
21 Cause Analysis (“FCA”), a third-party evidence collection vendor retained by PG&E.  
22 Employees of FCA are International Association of Arson Investigators (“IAAI”) Certified  
23 Evidence Collection Technicians and collect evidence in accordance with the standards of  
24 evidence collection established by the National Fire Protection Association (“NFPA”) and  
25 ASTM International.

26                   As the Court referenced in its November 6, 2020 order, the sections of the Gray  
27 Pine of interest collected on November 4 were removed by helicopter due to their size and  
28

1 weight and the terrain in the area. All evidence collected in the field on November 4 was logged  
2 by FCA and affixed with evidence tags to identify its approximate location when removed and  
3 document the chain of custody.

4 PG&E is still in the process of coordinating the collection of parts of the root  
5 system of the Gray Pine of interest. Before it commences that collection, PG&E will provide  
6 notice to the CPUC, CAL FIRE, the Shasta County District Attorney and lawyers representing  
7 certain civil plaintiffs.

8 **Question 14 [Part 2]:** Is there specific evidence that this particular gray pine was  
9 trimmed or removed prior to the Zogg Fire? Was this tree identified for work by  
10 any patrol?

11 **PG&E Response:**

12 PG&E currently believes the Gray Pine of interest may have been identified for  
13 removal (but not removed) during restoration efforts following the Carr Fire in 2018, based on  
14 certain records recently reviewed by PG&E concerning that restoration work. What PG&E has  
15 learned so far in its investigation is set forth here. The information provided here is preliminary,  
16 as PG&E's investigation is incomplete and in its beginning stages, and PG&E's understanding of  
17 the facts may change as that investigation continues. PG&E will provide an updated response,  
18 along with a declaration or declarations attesting to that response as requested by the Court, once  
19 it has analyzed further records and furthered its investigation.

20 As PG&E noted in its prior response on November 3, records associated with  
21 post-Carr Fire vegetation management work in the area of interest are stored by a third party,  
22 Mountain G Enterprises, Inc. ("Mountain G"). Since PG&E's prior responses, Mountain G has  
23 provided PG&E with some records associated with that work. Other requests from PG&E to  
24 Mountain G for records associated with the work that Mountain G and its affiliates and  
25 subcontractors performed for PG&E remain outstanding. PG&E is also collecting and reviewing  
26 its own documents that relate to the post-Carr Fire vegetation management work in the area of  
27 interest. PG&E is providing the information below based on its preliminary review of records

1 and its investigation, which PG&E will share with CAL FIRE, the Shasta County District  
 2 Attorney and the CPUC.

3 Following the Carr Fire in July 2018, PG&E engaged a number of contractors to  
 4 perform vegetation management work in the Carr Fire footprint, which included the Zogg Mine  
 5 Road area. As part of these efforts, Mountain G maintained a database of information generated  
 6 during the post-Carr Fire vegetation management work. The database maintained by  
 7 Mountain G is known as “ArcGIS”.<sup>13</sup>

8 Vegetation management personnel, including pre-inspectors and Quality Control  
 9 (“QC”) inspectors were instructed to upload information to the ArcGIS database using a  
 10 smartphone and computer tablet app called “Collector”. During post-Carr Fire vegetation  
 11 management work, pre-inspectors and QC inspectors would identify trees requiring work  
 12 through the Collector app. The inspectors also would input information about the tree, including  
 13 any additional location information, the tree species, and the removal class of the tree based on  
 14 its size. The pre-inspectors were also asked to spray paint trees identified for removal so that the  
 15 specific tree in question could be located by tree removal crews.

16 PG&E currently understands that Mountain G would subsequently assign the  
 17 work to a tree removal contractor, which included contractors associated with a Mountain G  
 18 affiliate (Mountain F Enterprises, Inc. (“Mountain F”)) or one of Mountain F’s subcontractors, as  
 19 well as other tree removal contractors. PG&E currently understands that work was assigned  
 20 directly through Collector or through paper work orders provided by Mountain G to the tree crew  
 21 contractors. These work orders were completed by tree crew contractors and returned to  
 22 Mountain G. PG&E currently understands that the tree removal contractor also had access to the  
 23 Collector app and could note when work was completed on a given tree. PG&E currently  
 24 understands that the post-Carr Fire restoration work was the first significant use of the Collector

25  
 26  
 27 <sup>13</sup> The ArcGIS database maintained by Mountain G to track the post-Carr Fire vegetation  
 28 management work is different from the ArcGIS database used for PG&E’s PSPS program  
 described above.

1 app by PG&E for vegetation management work and that tree removal contractors were not  
 2 consistent in recording completed trees in the app during this project.

3           In addition to pre-inspectors who performed patrols of the Girvan Circuit, PG&E  
 4 also engaged another contractor, California Forestry and Vegetation Management (“CFVM”), to  
 5 perform QC inspections of sample areas within the Carr Fire footprint. The area of interest was  
 6 one of the areas subject to such a QC inspection in August 2018. Based on PG&E’s review of  
 7 records maintained by Mountain G in connection with the post-Carr Fire restoration work, the  
 8 CFVM inspector who performed the QC inspection of the area of interest in August 2018 used  
 9 the Collector app to identify for removal two Gray Pine trees that have a location consistent with  
 10 the location of the Gray Pine from which CAL FIRE appears to have collected sections after the  
 11 Zogg Fire. Due to the fact that there were three other Gray Pines near the Gray Pine collected by  
 12 CAL FIRE, PG&E has been unable at this time to confirm whether either of the two Gray Pines  
 13 identified for removal were the Gray Pine from which CAL FIRE appears to have collected  
 14 portions after the Zogg Fire.

15           Following the CFVM QC inspector’s identification of these trees for removal,  
 16 Mountain G subsequently generated a work order that included the two Gray Pines identified by  
 17 the CFVM QC inspector. PG&E has requested from Mountain G on a priority basis any further  
 18 records associated with the work order that Mountain G or its affiliates have in their possession,  
 19 including any transmittals of the work order by Mountain G, and is awaiting Mountain G’s  
 20 response.

21           PG&E’s review of the ArcGIS records maintained by Mountain G indicates that  
 22 these two trees, together with certain other trees in the area of interest, may not have been  
 23 worked despite being identified for work by the CFVM QC inspector. Specifically, the  
 24 “TC\_WORKED” field—which PG&E understands stands for “Tree Crew Worked”—associated  
 25 with these trees have “No” values in the ArcGIS database extract provided by Mountain G to  
 26 PG&E. Further, the July 2019 photographs of the area of interest that PG&E previously  
 27  
 28

1 submitted to the Court do not appear to show any Gray Pines that had been felled in the  
 2 immediate area of the tree from which CAL FIRE collected sections.

3 PG&E is continuing to investigate why the two Gray Pines identified for work in  
 4 the area where the Gray Pine of interest was located do not appear to have been worked. PG&E  
 5 is aware that work in the Zogg Mine Road area was interrupted in October 2018 due to  
 6 interactions with a resident of Zogg Mine Road, who believed that PG&E crews were cutting  
 7 trees unnecessarily and had previously brandished a firearm to tree crews attempting to work in  
 8 the area and was threatening to do so again. PG&E is also aware based on its records that  
 9 inquiries were subsequently made in October 2018 about attempting to secure help from law  
 10 enforcement to stand by and protect tree crews against the resident that had brandished a firearm.  
 11 Among other things, PG&E is investigating what role, if any, that work interruption played in the  
 12 two Gray Pines apparently not having been worked.<sup>14</sup>

13 As the Court is aware, the Camp Fire started on November 8, 2018. PG&E  
 14 currently understands that at that point the post-Carr Fire response effort concluded and  
 15 resources were shifted to the post-Camp Fire response. By then, based on records reviewed by  
 16 PG&E, the vast majority of trees identified for work as part of the Carr Fire response had been  
 17 completed, but PG&E understands, that some trees remained unworked due to customer refusals  
 18 or other issues. Based on its investigation, PG&E understands that a PG&E vegetation  
 19 management regional manager, perhaps with other regional vegetation management personnel

---

20

21 <sup>14</sup> Records from Mountain G indicate that four trees in the area of interest—defined, again,  
 22 as the vicinity of the three specific spans of line from which CAL FIRE collected evidence—  
 23 were removed following post-Carr Fire vegetation management efforts, including one Ponderosa  
 24 Pine, one Valley Oak, one California Oak and one Gray Pine. Nine other trees in the area of  
 25 interest were identified during post-Carr Fire pre-inspections or the August 2018 QC inspection,  
 26 but have a value of “delisted” in the TC\_WORKED field associated with database entries for  
 27 them. PG&E understands “delisted” to mean that a tree had been evaluated prior to tree removal  
 work and that a determination had been made that it did not need to be removed or trimmed at  
 that time. As described above, there are also trees in the area of interest that have a “No” value  
 in the TC\_WORKED field, including the two Gray Pines discussed above, which suggests that  
 they may have neither been worked nor delisted. In total in the area of interest, there are  
 ten trees that have “No” value in the TC\_WORKED field.

1 managing the post-fire response work, decided that the remaining trees should be left to be  
 2 addressed by routine vegetation management patrols.

3 PG&E does not believe that the Gray Pine of interest was identified for removal  
 4 or trimming as a result of any of the routine or CEMA vegetation management patrols of the  
 5 Girvan Circuit that took place in the years preceding or following the Carr Fire. Specifically, in  
 6 its November 3 supplemental response, PG&E produced a table summarizing tree work in the  
 7 area of interest resulting from vegetation management patrols conducted by PG&E vegetation  
 8 management contractors from 2015 to 2020.<sup>15</sup> As indicated by those records, 14 Gray Pines<sup>16</sup> in  
 9 the area of interest were identified for work as a result of routine and separate CEMA patrols  
 10 between 2015 and 2020. Of the 14 Gray Pines in the area of interest that were identified for  
 11 work as a result of routine and CEMA vegetation management patrols between 2015 and 2020,  
 12 11 were identified for removal and subsequently removed. The remaining three Gray Pines were  
 13 identified for trimming and subsequently trimmed. PG&E believes that the Gray Pine of interest  
 14 was not one of the three trees identified for trimming as a result of routine and CEMA vegetation  
 15 management patrols between 2015 and 2020.<sup>17</sup>

16

17 <sup>15</sup> The table set forth on the second and third pages of PG&E's November 3 submission  
 18 indicates the months during which CEMA and routine vegetation management patrols along the  
 19 portion of the Girvan Circuit that includes the Zogg Mine Road area were performed. PG&E  
 20 notes that some of the patrols along other portions of the Girvan Circuit began or ended in  
 21 months other than those performed along the portion of the Girvan Circuit that includes the Zogg  
 22 Mine Road area. PG&E also notes that the date and tree figures reported for the 2018 CEMA  
 23 patrol apply only to the section of the Girvan Circuit that includes the Zogg Mine Road area. In  
 24 total, approximately 20 trees were identified during CEMA patrols along the entire Girvan  
 25 Circuit in 2018

26 <sup>16</sup> The table summarizing tree work in the area of interest provided in PG&E's November 3,  
 27 2020 submission indicated that four Ponderosa Pines and one Gray Pine were removed from the  
 28 area of interest pursuant to CEMA patrols in 2016 and 2017, respectively. Following further  
 checks of the underlying data, PG&E's current understanding is that only one tree—a Ponderosa  
 Pine—was removed from the area of interest pursuant to the 2016 CEMA patrol, and that no  
 trees were removed from the area of interest pursuant to the 2017 CEMA patrol.

26 <sup>17</sup> This belief is based on the estimated height difference between the three Gray Pines that  
 27 were trimmed and the Gray Pine of interest, as well as the location of the these three trees as  
 28 indicated by lat/long coordinates associated with the trees in PG&E's records.

1                   **Question 15:** If this is not the tree taken by CAL FIRE, then do we have  
 2                   anywhere a pre-fire photograph of the tree that was taken?

3                   **PG&E Response:**

4                   PG&E refers to its response to Question 14.

5                   **Question 16:** At page 8, lines 20–22, PG&E states that “work” was done on ten  
 6                   trees in the area of interest. What, specifically, was that work, tree by tree?

7                   **PG&E Response:**

8                   PG&E refers to the table set forth on the second and third pages of its  
 9                   November 3, 2020 submission. The work performed on each of the trees referenced in  
 10                   Question 16 is indicated under the “Type of Work” column.<sup>18</sup> An excerpt of the relevant portion  
 11                   of the table is reproduced below.

12 <b>Patrol</b>	13 <b>Area of Interest (3 Spans)</b>	
	14 <b>Trees Identified</b>	15 <b>Type of Work</b>
16                   Apr. 2019 17                   Routine	18                   2 Live Oaks	19                   Trimmed
	20                   4 Gray Pines	21                   Removed
	22                   1 Black Oak	23                   Removed
	24                   1 Knobcone Pine	25                   Removed
	26                   3 Ponderosa Pines	27                   Removed

18                   **Question 17:** Same question for the “work” referenced at page 9, line 13.

19                   **PG&E Response:**

20                   PG&E refers to the table set forth on the second and third pages of its  
 21                   November 3, 2020 submission. The work performed on each of the trees referenced in  
 22  
 23

24                   <sup>18</sup> As the Court notes, PG&E’s October 26 submission identified ten trees in the area of  
 25                   interest that were worked as a result of the 2019 routine patrol. PG&E identified in its  
 26                   November 3 submission one additional tree in the area of interest (a Ponderosa Pine) that also  
 27                   was worked as a result of the 2019 routine patrol but was inadvertently omitted from its prior  
 28                   submission. Based on PG&E’s current understanding of tree work in the area, PG&E interprets  
 the Court’s reference to “the ten [trees] referenced at page 8” as a reference to these 11 trees in  
 the area of interest that were worked as a result of the 2019 routine patrol.

1 Question 16 is indicated under the “Type of Work” column.<sup>19</sup> An excerpt of the relevant portion  
 2 of the chart is reproduced below.

3 Patrol	4 Area of Interest (3 Spans)	
	5 Trees Identified	6 Type of Work
7 Apr. 2018 CEMA	8 1 Gray Pine	9 Removed

10           **Question 18 [Part 1]:** Please provide all reports by PG&E or CNUC or Wright  
 11 Tree Service regarding the March to April 2020 patrols and work referenced at  
 12 page 8. Given that more than 2000 trees were identified for work on the Girvan  
 13 Circuit, why were only ten trees worked? For the 2019 patrols and work, were  
 14 additional trees identified for possible work beyond the ten referenced at page 8?  
 15 Same question for the October 2018 patrol and April 2018 CEMA patrol.  
 16 (PG&E’s answers say that as a result of patrols, work was prescribed for certain  
 17 trees and then done but this begs the question whether the patrols identified other  
 18 potential problems for which work was not done.)

19           **PG&E Response:**

20           PG&E refers to Exhibit A to its November 3 submission, which contained reports  
 21 by PG&E regarding the March to April 2020 vegetation management patrols and work  
 22 referenced at page 8 of its October 26, 2020 submission.

23           Regarding the 2020 routine patrol and work, the nine<sup>20</sup> trees that PG&E described  
 24 in connection with the 2020 routine patrol (and to which the Court appears to be referring) are

---

25           <sup>19</sup> PG&E’s October 26 submission identified five trees in the area of interest that were  
 26 worked as a result of both the 2018 CEMA patrol and 2018 routine patrol. PG&E identified in  
 27 its November 3 submission one additional tree in the area of interest (a Live Oak) that also was  
 28 worked as a result of the 2018 routine patrol but was inadvertently omitted from its prior  
 submission.

29           <sup>20</sup> Although the Court refers to “ten trees worked” in connection with the 2020 routine  
 30 patrol, PG&E’s October 26 submission identified six trees in the area of interest that were  
 31 worked as a result of the 2020 routine patrol. PG&E identified in its November 3 submission  
 32 three additional trees in the area of interest (two Gray Pines and one Canyon Live Oak) that also  
 33 were worked as a result of the 2020 routine patrol but were inadvertently omitted from its prior  
 34 submission.

1 those that were identified for work specifically in the area of interest. As stated in the  
 2 November 3 submission, the data recorded in PG&E's Vegetation Management Database  
 3 indicate that more than 2,000 trees along the entire Girvan Circuit were worked as a result of the  
 4 routine patrol.

5                 Regarding the 2019 patrols and work, the 11<sup>21</sup> trees that PG&E described in  
 6 connection with the April 2019 routine patrol (and to which the Court appears to be referring) are  
 7 those that were identified for work specifically in the area of interest. (Dkt. 1260 at 4.) As stated  
 8 in the November 3 submission, PG&E's Vegetation Management Database indicates that more  
 9 than 1,300 trees along the entire Girvan Circuit were worked as a result of the 2019 routine  
 10 patrol.

11                 Regarding the 2018 patrols and work, the six<sup>22</sup> trees described by PG&E in  
 12 connection with the April 2018 CEMA patrol and October 2018 routine patrol (and to which the  
 13 Court appears to be referring) are the trees that were identified for work specifically in the area  
 14 of interest. As stated in the November 3 submission, PG&E's Vegetation Management Database  
 15 indicates that approximately 1,630 trees along the entire Girvan Circuit were worked as a result  
 16 of the 2018 routine patrol and CEMA patrol.

17  
 18  
 19 submission. Based on PG&E's current understanding of tree work in the area, PG&E interprets  
 20 the Court's reference to "ten trees worked" as a reference to these nine trees in the area of  
 21 interest that were worked as a result of the 2020 routine patrol.

22                 <sup>21</sup> As the Court notes, PG&E's October 26 submission identified ten trees in the area of  
 23 interest that were worked as a result of the 2019 routine patrol. PG&E identified in its  
 24 November 3 submission one additional tree in the area of interest (a Ponderosa Pine) that also  
 25 was worked as a result of the 2019 routine patrol but was inadvertently omitted from its prior  
 26 submission. Based on PG&E's current understanding of tree work in the area, PG&E interprets  
 27 the Court's reference to "the ten [trees] referenced at page 8" as a reference to these 11 trees in  
 28 the area of interest that were worked as a result of the 2019 routine patrol.

29                 <sup>22</sup> PG&E's October 26 submission identified five trees in the area of interest that were  
 30 worked as a result of both the 2018 CEMA patrol and 2018 routine patrol. PG&E identified in  
 31 its November 3 submission one additional tree in the area of interest (a Live Oak) that also was  
 32 worked as a result of the 2018 routine patrol but was inadvertently omitted from its prior  
 33 submission.

1                   **Question 18 [Part 2]:** Please explain why the area of interest was not subject to a  
 2                   separate CEMA patrol in 2019.

3                   **PG&E Response:**

4                   PG&E responded to this question in its November 3 submission. There, PG&E  
 5                   explained the facts known to PG&E regarding why the area of interest was not subject to a  
 6                   separate CEMA patrol in 2019, and PG&E refers the Court to that response. PG&E is now  
 7                   supplementing its November 3 submission based on further investigation to include facts PG&E  
 8                   has since learned regarding one issue described in that submission—specifically, the April 4,  
 9                   2019 change in PG&E’s Project Management Database (“PMD”) to move the scheduled start  
 10                  date for the CEMA patrol of the Zogg Mine Road area from November 15, 2019 to February 15,  
 11                  2019.

12                  Beginning in 2019, management of PG&E’s CEMA program was transferred  
 13                  from a centralized CEMA team to each of the local PG&E offices that managed routine  
 14                  vegetation management patrols. Also at this time, as previously noted, PG&E was moving to a  
 15                  risk-informed schedule for vegetation management work that prioritized routine patrols for high  
 16                  fire-risk circuits so that they occurred before fire season.

17                  As described in PG&E’s November 3 submission, on January 29, 2019, a  
 18                  database management specialist changed the scheduled start date for the routine patrol of the  
 19                  Zogg Mine Road area to May 27, 2019, consistent with changes to the risk-based schedule for  
 20                  2019. Prior to 2019, the routine patrol of the Zogg Mine Road area had been conducted in  
 21                  October or November. On March 12, 2019, the same database management specialist changed  
 22                  the scheduled start date for the separate CEMA patrol of the Zogg Mine Road area to  
 23                  November 15, 2019, creating an approximate six-month offset from the new date for the routine  
 24                  patrol. The database management specialist who made these changes was based in the local  
 25                  office that had responsibility for the Zogg Mine Road area.

26                  In late March 2019, a review of PMD was conducted to attempt to confirm that  
 27                  the scheduled dates for all 2019 CEMA patrols were appropriately offset from the scheduled date  
 28

1 of the corresponding routine patrol. This review was conducted by comparing the quarter in  
 2 which a routine patrol of a given circuit was scheduled to begin with the quarter in which the  
 3 corresponding CEMA patrol was scheduled to begin. At the time of the March 2019 review, the  
 4 routine patrol of the Zogg Mine Road area was scheduled to begin on May 27, 2019, a date in the  
 5 third quarter of PG&E's pre-inspection calendar, and the CEMA patrol was scheduled for  
 6 November 15, 2019, a date in the fourth quarter of PG&E's pre-inspection calendar.<sup>23</sup>

7 The data management specialist contractor conducting the March 2019 review  
 8 identified entries in the PMD that did not have a two-quarter offset between routine and CEMA  
 9 patrols for each circuit. PG&E understands that because the routine and CEMA patrols of the  
 10 Zogg Mine Road area were scheduled to occur in consecutive quarters (Q3 and Q4), the database  
 11 management specialist contractor conducting the March 2019 review changed, on April 4, 2019,  
 12 the scheduled start date of the CEMA patrol for the Zogg Mine Road area from Q4 (November  
 13 15) to a date in Q1 (February 15) to create a two-quarter offset from the routine patrol that had  
 14 been scheduled for May 27 (a date in Q3). Because Q1 had already passed by April 4, 2019, the  
 15 CEMA patrol registered in PMD as overdue after this change. PG&E notes that the routine  
 16 patrol conducted from March to April 2020 involved an assessment of the Zogg Mine Road area  
 17 for dead, diseased or dying trees (as would a CEMA patrol), but is not regarded by PG&E as a  
 18 separate CEMA patrol that counted toward PG&E's 2019 Wildfire Mitigation Plan target of  
 19 100% completion of CEMA patrols on in-scope line miles. As noted above, trees were identified  
 20 for work and worked in the area of interest during the 2019 and 2020 routine patrols.

21 While the intent of the March 2019 review was to create an appropriate offset  
 22 between the routine and CEMA patrols, the use of quarters to identify CEMA patrols that needed  
 23 rescheduling did not account for the fact that the routine and CEMA patrols for the Zogg Mine  
 24  
 25

26 \_\_\_\_\_  
 27 <sup>23</sup> PG&E's pre-inspection calendar begins approximately six weeks prior to the start of the  
 28 calendar year, running from November 16 to November 15, as opposed to January 1 to  
 December 31. Under this calendar, the beginning dates for each quarter are November 16,  
 February 16, May 16 and August 16 for the first, second, third and fourth quarters, respectively.

1 Road area were already scheduled approximately six months apart, even though they were  
2 scheduled for consecutive quarters.

3 These mid-year scheduling adjustments to the CEMA patrols were unique to  
4 2019, given the previously detailed transition in that year to risk-based reprioritization of routine  
5 patrols.

6 The fact that a separate CEMA inspection was not performed when the schedule  
7 would have caused it to be completed close in time to a routine patrol is consistent with guidance  
8 from PG&E's vegetation management team in 2019. Under that guidance, PG&E did not  
9 perform a separate CEMA inspection and closed the CEMA project in PG&E's PMD following  
10 commencement of the routine patrol in situations where, as a result of risk-based prioritization  
11 changes to the routine patrol schedule, the CEMA patrol (the scope of which is subsumed in a  
12 routine patrol) had been scheduled close in time to the routine patrol.

13 **Question 19:** Please attach in chronological order paper copies of all maps, charts,  
14 diagrams, reports, memos, text messages, emails, recordings, or other documents in your  
15 possession that refer to the Girvan Line or any PSPS in Shasta County that were  
16 consulted or prepared in the period from September 21 to September 30, 2020, in  
17 connection with the PSPS. Videos or recordings of Zoom or similar meetings may be  
18 provided by thumb drive along with a paper index of the drive's contents.

19 **PG&E Response:**

20 PG&E has delivered to the Court 12 indexed binders containing paper copies of  
21 the 1,422 documents bearing Bates PGE-ZOGG-NDCAL-00000001 to PGE-ZOGG-NDCAL-  
22 00009367 that PG&E has identified as potentially responsive to this request. Because certain  
23 potentially responsive Excel files and mapping files are not formatted to be conducive to easy  
24 printing, PG&E included slipsheets bearing the Bates numbers in lieu of such files in the binders  
25 and has provided such files on a thumb drive that PG&E has also delivered.

26 PG&E understands the phrase "any PSPS in Shasta County" in the Court's  
27 request to refer to the three circuits in Shasta County that were de-energized as part of the  
28

1 September 27, 2020 PSPS event. To respond to the Court's document request in the time  
2 provided by the Court, PG&E has attempted to conduct a reasonable search for responsive  
3 documents by using the following parameters. PG&E identified a list of eight custodians (the  
4 "Custodians") likely to have documents responsive to the Question, including individuals who  
5 served during the September 27, 2020 PSPS event as the Officer-In-Charge, Emergency  
6 Operations Center ("EOC") Commander, Deputy EOC Commander, Meteorologist-In-Charge,  
7 Operations Chief, Planning Chief and Customer Strategy Officer. PG&E also identified the  
8 September 27, 2020 PSPS event folders (the "Folders") of three electronic repositories likely to  
9 have documents responsive to the request: the Emergency Operations Center SharePoint, the  
10 Emergency Operations Center Operations SharePoint and the Meteorology Shared Drive.

11 PG&E ran the following search terms against the Custodians' and Folders'  
12 documents: Girvan\*, Shasta\*, Deschutes\*, Volta\*, Time Place 6, TimePlace6, TimePlace 6,  
13 Time Place 06, TimePlace06, TimePlace 06, TP 6, TP6, TP 06 and TP06. Each of the  
14 Custodians' and Folders' documents dated between September 21 and September 30, 2020 that  
15 contained one or more of the Search Terms was reviewed and, if determined to be potentially  
16 responsive to the request, produced to the Court. Where applicable, PG&E has redacted portions  
17 of documents determined to be protected by attorney-client privilege or to constitute attorney  
18 work product.

19 PG&E notes that certain documents in the binders being produced to the Court  
20 contain confidential information, including employee-identifying information. PG&E is in the  
21 process of identifying and redacting such confidential information and, when it has done so, will  
22 file a motion to seal the documents provided to the Court on the docket with such redactions  
23 applied.

24  
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26  
27  
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1 Dated: November 18, 2020

Respectfully Submitted,

2 JENNER & BLOCK LLP

3

4 By: /s/ Reid J. Schar  
Reid J. Schar (*pro hac vice*)

5

6 CRAVATH, SWAINE & MOORE LLP

7

8 By: /s/ Kevin J. Orsini  
Kevin J. Orsini (*pro hac vice*)

9

10 CLARENCE DYER & COHEN LLP

11

12 By: /s/ Kate Dyer  
Kate Dyer (Bar No. 171891)

13

14 Attorneys for Defendant PACIFIC  
15 GAS AND ELECTRIC COMPANY

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## **Appendix A**

Column Heading	Description
<b>lfp_fpi_opwp</b>	The product of the Utility FPI and OPW models
<b>dx_conditions</b>	Conclusion of model, either: <ul style="list-style-type: none"> <li>• Below_Guidance</li> <li>• Fire_Potential</li> <li>• Dx_Fire_Potential</li> <li>• Black_Swan</li> </ul>
<b>pomms2km_we_sn</b>	Grid cell index identifier (two km-by-two km)
<b>index_join</b>	Grid cell index identifier (three km-by-three km)
<b>dt_local</b>	The valid time for the forecast hour start (PDT)
<b>model_run_id</b>	Date/time the model run is initialized (UTC)
<b>opwp_cmax</b>	OPW model output
<b>pomms_lat</b>	Grid cell's mid-point latitude
<b>pomms_long</b>	Grid cell's mid-point longitude
<b>ws_mph</b>	Forecast sustained windspeed in miles per hour
<b>ffwi</b>	Fosberg Fire Weather Index
<b>t2m</b>	Temperature at 2m above ground (f)
<b>rh2m</b>	Relative humidity at 2m above ground (%)
<b>fpi</b>	Utility FPI model output
<b>lfm</b>	Live fuel moisture
<b>dfm10hr</b>	Dead fuel moisture - 10-hour
<b>dfm100hr</b>	Dead fuel moisture - 100-hour
<b>dfm1000hr</b>	Dead fuel moisture - 1000-hour
<b>year</b>	Date for when forecast model is initialized
<b>month</b>	Date for when forecast model is initialized
<b>day</b>	Date for when forecast model is initialized
<b>circuit_name</b>	The distribution circuit that passes through this instance of the grid cell <sup>24</sup>

<sup>24</sup> PG&E added this column to certain model outputs for the Court's ease, and because some grid cells may be traversed by more than one distribution circuit, duplicative instance for such grid cells will appear in the data.

1 **Appendix B**

Bates Number	Description <sup>25</sup>
PGE-ZOGG-NDCAL-00009368	2 km 00:00 LFP <sub>D</sub> model output for the Girvan Circuit
PGE-ZOGG-NDCAL-00009369	2 km 06:00 LFP <sub>D</sub> model output for the Girvan Circuit
PGE-ZOGG-NDCAL-00009370	2 km 12:00 LFP <sub>D</sub> model output for the Girvan Circuit
PGE-ZOGG-NDCAL-00009371	2 km 18:00 LFP <sub>D</sub> model output for the Girvan Circuit
PGE-ZOGG-NDCAL-00009372	3 km 00:00, 06:00, 12:00 and 18:00 LFP <sub>D</sub> model outputs for the Girvan Circuit
PGE-ZOGG-NDCAL-00009373	2 km September 27, 2020 00:00 LFP <sub>D</sub> model output for Shasta County Distribution Circuits
PGE-ZOGG-NDCAL-00009374	3 km September 27, 2020 00:00 LFP <sub>D</sub> model output for Shasta County Distribution Circuits
PGE-ZOGG-NDCAL-00009375	2 km land type classifications for the Girvan Circuit
PGE-ZOGG-NDCAL-00009376	3 km land type classifications for the Girvan Circuit
PGE-ZOGG-NDCAL-00009377	2 km 00:00 LFP <sub>D</sub> model output for the portions of distribution circuits inside the Shasta County de-energization polygon
PGE-ZOGG-NDCAL-00009378	2 km 06:00 LFP <sub>D</sub> model output for the portions of distribution circuits inside the Shasta County de-energization polygon
PGE-ZOGG-NDCAL-00009379	2 km 12:00 LFP <sub>D</sub> model output for the portions of distribution circuits inside the Shasta County de-energization polygon
PGE-ZOGG-NDCAL-00009380	2 km 18:00 LFP <sub>D</sub> model output for the portions of distribution circuits inside the Shasta County de-energization polygon
PGE-ZOGG-NDCAL-00009381	3 km 00:00 LFP <sub>D</sub> model output for the portions of distribution circuits inside the Shasta County de-energization polygon
PGE-ZOGG-NDCAL-00009382	3 km 06:00 LFP <sub>D</sub> model output for the portions of distribution circuits inside the Shasta County de-energization polygon
PGE-ZOGG-NDCAL-00009383	3 km 12:00 LFP <sub>D</sub> model output for the portions of distribution circuits inside the Shasta County de-energization polygon

27 <sup>25</sup> Except when otherwise noted, all LFP<sub>D</sub> model run outputs are for model runs in  
 28 September 2020.

1	PGE-ZOGG-NDCAL-00009384	3 km 18:00 LFP <sub>D</sub> model output for the portions of distribution circuits inside the Shasta County de-energization polygon
2	PGE-ZOGG-NDCAL-00009385	2 km land type classifications for the portions of distribution circuits inside the Shasta County de-energization polygon
3	PGE-ZOGG-NDCAL-00009386	3 km land type classifications for the portions of distribution circuits inside the Shasta County de-energization polygon
4	PGE-ZOGG-NDCAL-00009387	2 km 00:00 LFP <sub>D</sub> model output for Deschutes 1101, Volta 1101 and Volta 1102
5	PGE-ZOGG-NDCAL-00009388	2 km 06:00 LFP <sub>D</sub> model output for Deschutes 1101, Volta 1101 and Volta 1102
6	PGE-ZOGG-NDCAL-00009389	2 km 12:00 LFP <sub>D</sub> model output for Deschutes 1101, Volta 1101 and Volta 1102
7	PGE-ZOGG-NDCAL-00009390	2 km 18:00 LFP <sub>D</sub> model output for Deschutes 1101, Volta 1101 and Volta 1102
8	PGE-ZOGG-NDCAL-00009391	3 km 00:00 LFP <sub>D</sub> model output for Deschutes 1101, Volta 1101 and Volta 1102
9	PGE-ZOGG-NDCAL-00009392	3 km 06:00 LFP <sub>D</sub> model output for Deschutes 1101, Volta 1101 and Volta 1102
10	PGE-ZOGG-NDCAL-00009393	3 km 12:00 LFP <sub>D</sub> model output for Deschutes 1101, Volta 1101 and Volta 1102
11	PGE-ZOGG-NDCAL-00009394	3 km 18:00 LFP <sub>D</sub> model output for Deschutes 1101, Volta 1101 and Volta 1102

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